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NASA-16305 (June 2004)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16305

OVERHEAD MEDIUM-VOLTAGE WIRING

06/04

PART 1 GENERAL

1.1 REFERENCES
1.2 SUBMITTALS
1.3 GENERAL REQUIREMENTS

PART 2 PRODUCTS

2.1 CONDUCTORS
2.2 SPLICES
2.3 HARDWARE

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS
3.2 INSTALLATION

-- End of Section Table of Contents --

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SECTION 16305

OVERHEAD MEDIUM-VOLTAGE WIRING

06/04

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers overhead primary wiring. Use Section 16315 MEDIUM VOLTAGE OVERHEAD POWER DISTRIBUTION for appurtenant pole-line work, insulators and hardware. Medium-voltage is 2400 volts to 69000 volts in accordance with ANSI C84.1-1995.

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PART 1 GENERAL

1.1 REFERENCES

****

NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.

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The publications listed below form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

ASTM B 1	(2001) Standard Specification for Hard-Drawn Copper Wire
ASTM B 232/B 232M	(2001e1) Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel-Reinforced (ACSR)
ASTM B 398/B 398M	(2002) Specification for Aluminum-Alloy 6201-T81 Wire for Electrical Purposes
ASTM B 399/B 399M	(1999) Specification for Concentric-Lay-Stranded Aluminum-Alloy 6201-T81 Conductors
ASTM B 8	(1999) Standard Specification for

Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2002) National Electrical Safety Code

1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01330 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.
****

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-03 Product Data

Manufacturer's product data shall be submitted for the following items:

Conductors
Splices
Hardware
Clamps
Stringing Sheaves

SD-08 Manufacturer's Instructions

Overhead Medium-Voltage Wiring Systems

1.3 GENERAL REQUIREMENTS

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NOTE: If Section 16003 GENERAL ELECTRICAL PROVISIONS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.
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Section 16003 GENERAL ELECTRICAL PROVISIONS applies to work specified in this section.

PART 2 PRODUCTS

2.1 CONDUCTORS

Line conductors shall be bare [hard-drawn stranded copper of the sizes indicated, conforming to ASTM B 8 ASTM B 1.] [aluminum conductors, steel reinforced, (ACSR), of the sizes indicated, conforming to ASTM B 232/B 232M

ASTM B 232/B 232M.][All Aluminum-Alloy Conductor (AAAC), of the sizes indicated, conforming to ASTM B 398/B 398M and ASTM B 399/B 399M]

2.2 SPLICES

Splicing material shall be UL approved.

Splices under tension shall be the compression type with strength not less than that of the conductor spliced and made of suitable noncorrosive materials.

2.3 HARDWARE

Hardware shall be UL approved.

Tie wires shall be No. 6 AWG 4.12 millimeter diameter [medium-hard drawn bare copper.] [strong aluminum alloy or No. 4 AWG 5.19 millimeter diameter annealed aluminum;] armor shall be as recommended by the manufacturer.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

Manufacturer's instructions shall be submitted for Overhead Medium-Voltage Wiring Systems indicating the manufacturer's recommended operation instructions.

3.2 INSTALLATION

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NOTE: For installations in California, use California Public Utilities Commission, Dgs Gen. Ord. 95, "Rules for Overhead Electric Line Construction," in lieu of IEEE C2.

****

Installation shall comply with the requirements and recommendations of IEEE C2 for medium loading conditions, Grade B construction.

[Tie] [Clamp] conductors to insulators in accordance with insulator manufacturer written installation instructions.

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NOTE: Delete the following paragraph if aluminum conductors are not used.

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Conductors shall be armored at all points of support. For spans less than 200 feet 60 meter, flat armor may be used.

Dead ends shall be made with clamps designed for the purpose, with a strength not less than that of the conductor.

Care shall be taken in handling and stringing conductors to prevent cuts, scratches, and kinks. Conductors shall not be drawn over rough or rocky ground or around sharp bends. When drawn by machine power, conductors shall be drawn from the mounted reels through stringing sheaves in approximately straight lines and clear of all obstructions.

Where conductors pass through trees, the trees shall be trimmed at least 8-feet 2400 millimeter clear of conductors vertically and horizontally, and no branch shall overhang the horizontal clearance. A climbing space at least 48-inches 1200 millimeter square shall be provided.

Initial stringing sags and tensions shall be in accordance with approved values for the conductors furnished. Indicated clearances shall be maintained.

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NOTE: Omit the following paragraph if a static wire is not required.

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A static wire of stranded copper-coated steel, of size as indicated, shall be installed above the conductors to afford a 30-degree cone of lightning protection. Static wires shall be grounded at each pole and structure.

A neutral conductor of material the same as phase conductors, of size as indicated, shall be installed at an elevation equal to or below phase conductors in accordance with clearance requirements of IEEE C2.

-- End of Section --